Use of mason bees for pollination in covered organic orchards

**Problem**

Good pollination is essential for fruit yield and quality. However, the population of bees (honeybees, wild bees), the primary pollinators, is decreasing. Pollinators are often present in too few numbers in intensive fruit orchards, also organic ones.

**Solution**

Mason bees, which fly at lower temperatures (4°C on) compared to honeybees, are placed into the orchards just before flowering to improve pollination.

**Benefits**

Using mason bees can ensure optimal pollination in intensive fruit orchards when naturally occurring pollinators are not (yet) present or are too few.

**Practical recommendations**

The two most important managed wild bees for fruit crops pollination are the European orchard bee (*Osmia cornuta*) and the Red mason bee (*Osmia bicornis*), both mason bees (life cycle: see Picture 1):

<table>
<thead>
<tr>
<th>Mason bee Type</th>
<th>Female (♀) and Male (♂)</th>
<th>Aspect of the cocoon</th>
<th>Time point of application</th>
<th>Length of Hatching</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>European orchard bee (Osmia cornuta)</strong></td>
<td><img src="https://example.com/female_male_bees.png" alt="Female and Male Bees" /></td>
<td><img src="https://example.com/cocoon_example.png" alt="Cocoon Example" /></td>
<td>3 days prior to flowering*</td>
<td>10 days</td>
<td>Suitable for early flowering fruit species like stone fruit (apricot, cherry, plum).</td>
</tr>
<tr>
<td><strong>Red mason bee (Osmia bicornis)</strong></td>
<td><img src="https://example.com/female_male_bees.png" alt="Female and Male Bees" /></td>
<td><img src="https://example.com/cocoon_example.png" alt="Cocoon Example" /></td>
<td>10 days prior to flowering*</td>
<td>10-25 days</td>
<td>Hatches a bit later than the European orchard bee and is therefore suited for medium to late flowering fruit species like pome fruit (apple, pear) and berries.</td>
</tr>
</tbody>
</table>

*Depending on the temperature, the European orchard bee (*Osmia cornuta*) hatches after 3-4 days of their release and the Red mason bee (*Osmia bicornis*) after around 10 days.

**Picture 1. The life cycle of the European orchard bee and the Red mason bee.**

Use of mason bees for pollination in covered organic orchards. FiBL. BIOFRUITNET practice abstract.
Release mason bees

- Place one or more nesting boxes (Picture 2) on the inner edge and within the orchard (1 m above ground) so that they face the tree rows and can easily reach the flowers, possibly oriented south or southeast.
- Mason bees fly in a perimeter of 50-200 m, so adapt the number and placing of the nesting boxes accordingly. Around 2000 cocoons (2-3 nesting boxes) are needed to pollinate a low-stem fruit orchard of 1 ha.
- Place the overwintered cocoons in the nesting box so they are protected but can also fly out (e.g., a carton box with exit holes).

Where to get mason bees

- Subscription to mason bee rental service (check online if there is a mason bee rental service for your country, e.g., www.pollinature.net), or
- Maintain and propagate mason bees yourself (see further reading (1)).

Further information

Video

- BIOFRUITNET video: Mason bees for successful pollination in closed cherry orchards. (DE, subtitles in DE, EN, FR)

Further reading


Weblinks

- Check the Organic Farm Knowledge platform for more practical recommendations.

About this practice abstract

Publisher: Research Institute of Organic Agriculture FiBL
Ackerstrasse 113, Postfach 219, CH-5070 Frick
Phone: +41 62 865 72 72, info.suisse@fibl.org, www.fibl.org
Author: Clémence Boutry
Contact: clemence.boutry@fibl.org

Review: Sabrina Gurten (FiBL), Ambra De Simone (IFOAM Organics Europe), Radek Vavra (VSUO), Lauren Dietemann (FiBL)
Permalink: Organic-farmknowledge.org/tool/44997
Project name: BIOFRUITNET - Boosting Innovation in ORGANIC FRUIT production through stronger networks
Project website: https://biofruitnet.eu
© 2022